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Re application of: **Wolfgang HILL et al.**  
Serial No.: 10/820,093  
Filed: April 7, 2004  
For: **ELECTROMAGNETIC FRICTION CLUTCH**

Sir:

Transmitted herewith is an **Appellant's Brief under 37 CFR §41.37 including Appendices A to C (11 pages)** in the above-identified application.

[ ] Also transmitted herewith are:

- [ ] Petition for extension of time under 37 C.F.R. 1.136  
[ ] Other:

[X] Check(s) in the amount of **\$500.00** is/are attached to cover:

- [ ] Filing fee for additional claims under 37 C.F.R. 1.16  
[ ] Petition fee for extension under 37 C.F.R. 1.136

[X] Other: **Fee for filing a brief in support of an appeal under 37 CFR § 41.20(b)(2)**

[X] The Assistant Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 50-0552.

[X] Any filing fee under 37 C.F.R. 1.16 for the presentation of additional claims which are not paid by check submitted herewith.

[X] Any patent application processing fees under 37 C.F.R. 1.17.

[X] Any petition fees for extension under 37 C.F.R. 1.136 which are not paid by check submitted herewith, and it is hereby requested that this be a petition for an automatic extension of time under 37 CFR 1.136.

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I hereby certify that the documents referred to as attached therein and/or transmitted herewith and/or fee(s) are being deposited with the United States Postal Service as "first class mail" with sufficient postage in an envelope addressed to "Mail Stop: APPEAL BRIEF - PATENTS, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" on January 3, 2007.  
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BY:

Randall M. Berman



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Re: Application of: Wolfgang HILL et al.  
Serial No.: 10/820,093 Confirmation No.: 7149  
Filed: April 7, 2004  
For: ELECTROMAGNETIC FRICTION CLUTCH  
Art Unit: 3681  
Examiner: Saul RODRIGUEZ  
Attorney Docket No.: 588.1023  
Customer No.: 23280

Mail Stop: APPEAL BRIEF - PATENTS  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

January 3, 2007

**APPELLANTS' BRIEF UNDER 37 C.F.R. § 41.37**

Sir:

Appellants submit this brief for the consideration of the Board of Patent Appeals and Interferences (the "Board") in support of their appeal of the Final Rejection dated June 2, 2006 in this application. The statutory fee of \$500.00 is paid herewith.

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## 1. REAL PARTY IN INTEREST

The real party in interest is LuK Lamellen und Kupplungsbau Beteiligungs KG, a German corporation having a place of business in Buehl, Germany, the assignee of the entire right, title and interest in the above-identified patent application.

## 2. RELATED APPEALS AND INTERFERENCES

Appellants, their legal representatives, and assignee are not aware of any appeal, interference or judicial proceeding that directly affects, will be directly affected by, or will have a bearing on the Board's decision in this appeal.

## 3. STATUS OF CLAIMS

Claims 29 to 34 were canceled. Claims 1 to 28 and 35 to 37 are pending. Claim 36 has been allowed, claims 1, 2, 7, 14 to 16, 20, 21, 23 to 25, 35 and 37 have been finally rejected, and claims 3 to 6, 8 to 13, 17 to 19, 22 and 26 to 28 have been objected to as per the Final Office Action dated June 2, 2006.

The rejection to claims 1, 2, 7, 14 to 16, 20, 21, 23 to 25, 35 and 37 thus is appealed. A copy of appealed claims 1, 2, 7, 14 to 16, 20, 21, 23 to 25, 35 and 37 is attached hereto as Appendix A.

Applicant reserves the right to file for the objected claims at a later date.

## 4. STATUS OF AMENDMENTS AFTER FINAL

No amendments after final office action were made. Applicants' Notice of Appeal was received by the U.S. PTO on November 3, 2006.

## 5. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 recites an electromagnetic friction clutch (see, e.g., 1 in Fig. 1 and specification at [0033]) comprising: a first clutch part (see, e.g., 2 in Fig. 1 and specification at [0033]) and a second clutch part (see, e.g., 3 in Fig. 1 and specification at [0033]) mounted so as

to be rotatable relative to each other (see, e.g., Fig. 1 and specification at [0033]), the first clutch part having a soft magnetic material defining at least part of a magnetic circuit (see, e.g., Fig. 1 and specification at [0037]), the magnetic circuit having a magnetic force for pressing the first and second clutch parts together (see, e.g., Fig. 2 and specification at [0036] and [0037]); and at least one electromagnet being situated in the magnetic circuit (see, e.g., 12 and 17 in Fig. 1 and specification at [0038]) to change the magnetic flux in the first and second clutch parts (see, e.g., Fig. 1 and specification at [0038]); the magnetic circuit being guided in the first and second clutch parts in such a way that the magnetic flux changes at at least ten flux crossover points one after the other in a direction of flow of the magnetic circuit between the first and second clutch parts (see, e.g., Figs. 1 and 2 and specification at [0005] and [0039]).

Independent claim 35 recites an electromagnetic friction clutch (see, e.g., 1 in Fig. 1 and specification at [0033]) comprising: a first clutch part (see, e.g., 2 in Fig. 1 and specification at [0033]) and a second clutch part (see, e.g., 3 in Fig. 1 and specification at [0033]) mounted so as to be rotatable relative to each other (see, e.g., Fig. 1 and specification at [0033]), the first clutch part having a soft magnetic material defining at least part of a magnetic circuit (see, e.g., Fig. 1 and specification at [0037]), the magnetic circuit having a magnetic force for pressing the first and second clutch parts together (see, e.g., Fig. 2 and specification at [0036] and [0037]); at least one electromagnet being situated in the magnetic circuit (see, e.g., 12 and 17 in Fig. 1 and specification at [0038]) to change the magnetic flux in the first and second clutch parts (see, e.g., Fig. 1 and specification at [0038]); the magnetic circuit being guided in the first and second clutch parts so that the magnetic flux changes at at least five flux crossover points one after the other in a direction of flow of the magnetic circuit between the first and second clutch parts (see, e.g., Figs. 1 and 2 and specification at [0006] and [0039]), the soft magnetic material being at least partially configured as a laminated core having layers electrically insulated from each other at right angles to the direction of flow (see, e.g., Fig. 2 and specification at [0006] and [0044]).

## 6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1, 2, 7, 14 to 16, 20, 21, 23 to 25, 35 and 37 should be rejected under 35 U.S.C. § 102(e) as being anticipated by Stretch (US 6,619,453).

## 7. ARGUMENTS

### Rejections under 35 U.S.C. §102(e)

Claims 1, 2, 7, 14 to 16, 20, 21, 23 to 25, 35 and 37 were rejected under 35 U.S.C. § 102(e) as being anticipated by Stretch (US 6,619,453).

Stretch shows an electromagnetic mechanical particle clutch 68 and an electromagnetic friction clutch 70. The particle clutch 68 is not an electromagnetic friction clutch. See col. 1, lines 38 to 40 of Stretch. As described by Stretch at col. 1, lines 22 to 45, an electromagnetic friction clutch operates in an on-off manner in which a friction plate impacts against an output member due to magnetic field forces. **“Unlike an electromagnetic friction clutch, a magnetic particle clutch”** as in Stretch provides for a magnetically reactive medium 28 in an always present gap 26. See col 1, lines 38 to 43 and Figs. 2, 3 and 4 of Stretch.

The Stretch device thus describes an electromagnetic friction clutch 70 in Fig. 4 and a separate magnetic particle clutch 68 in Fig. 4. See col. 5, line 64 et seq.

Claim 1 recites: “An electromagnetic friction clutch comprising:  
a first clutch part and a second clutch part mounted so as to be rotatable relative to each other, the first clutch part having a soft magnetic material defining at least part of a magnetic circuit, the magnetic circuit having a magnetic force for pressing the first and second clutch parts together; and

at least one electromagnet being situated in the magnetic circuit to change the magnetic flux in the first and second clutch parts;

the magnetic circuit being guided in the first and second clutch parts in such a way that the magnetic flux changes at at least ten flux crossover points one after the other in a direction of flow of the magnetic circuit between the first and second clutch parts.”

The overall device of Stretch is clearly not an electromagnetic friction clutch as recited in claim 1 as Stretch itself states that magnetic particle clutches are “unlike” friction clutches and clearly describes the differences. Thus the overall Stretch device is a combination particle clutch and electromagnetic clutch (see lines 7 to 10) which is not an electromagnetic friction clutch as claimed. In addition, input member 18 is not part of any electromagnetic friction clutch as asserted.

To the extent Stretch does disclose an electromagnetic clutch with electromagnetic friction clutch 70 shown in Fig. 4, this clutch 70 does not disclose an electromagnetic friction clutch where the “magnetic circuit having a magnetic force for pressing the first and second clutch parts together” is “guided in the first and second clutch parts in such a way that the magnetic flux changes at at least ten flux crossover points one after the other in a direction of flow of the magnetic circuit between the first and second clutch parts” as claimed. Clutch 70 in Stretch does not have ten flux crossover points. Again, Stretch explicitly states that the clutch 68 is not an electromagnetic friction clutch.

Withdrawal of the rejection to claim 1 and its dependent claims under 35 U.S.C. § 102(e) thus is respectfully requested.

Claim 14: Argued Separately

Claim 14 recites: “The electromagnetic friction clutch as recited in claim 1 wherein the first clutch part includes a first clamping jaw and a second clamping jaw movable with respect to each other and the second clutch part is configured as a disk positioned between the first and second clamping jaws.”

Stretch does not show or teach “wherein the first clutch part includes a first clamping jaw and a second clamping jaw movable with respect to each other and the second clutch part is configured as a disk positioned between the first and second clamping jaws” as claimed. Nor have such features been asserted.

Withdrawal of the rejection under 35 U.S.C. §102(e) to claim 14 for this reason as well thus is respectfully requested.

Claim 35: Argued Separately

Claim 35 recites: "An electromagnetic friction clutch comprising:

a first clutch part and a second clutch part mounted so as to be rotatable relative to each other, the first clutch part having a soft magnetic material defining at least part of a magnetic circuit, the magnetic circuit having a magnetic force for pressing the first and second clutch parts together;

at least one electromagnet being situated in the magnetic circuit to change the magnetic flux in the first and second clutch parts;

the magnetic circuit being guided in the first and second clutch parts so that the magnetic flux changes at at least five flux crossover points one after the other in a direction of flow of the magnetic circuit between the first and second clutch parts, the soft magnetic material being at least partially configured as a laminated core having layers electrically insulated from each other at right angles to the direction of flow."

Stretch also does not show such an electromagnetic friction clutch, nor has the final Office Action identified any laminated core in Stretch.

Withdrawal of the rejection to claim 35 as well thus is respectfully requested.

Respectfully submitted,

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**APPENDIX A:**

**PENDING CLAIMS 1, 2, 7, 14 TO 16, 20, 21, 23 TO 25, 35  
AND 37 OF U.S. APPLICATION SERIAL NO. 10/820,093**

Claim 1 (original): An electromagnetic friction clutch comprising:

a first clutch part and a second clutch part mounted so as to be rotatable relative to each other, the first clutch part having a soft magnetic material defining at least part of a magnetic circuit, the magnetic circuit having a magnetic force for pressing the first and second clutch parts together; and

at least one electromagnet being situated in the magnetic circuit to change the magnetic flux in the first and second clutch parts;

the magnetic circuit being guided in the first and second clutch parts in such a way that the magnetic flux changes at at least ten flux crossover points one after the other in a direction of flow of the magnetic circuit between the first and second clutch parts.

Claim 2 (original): The electromagnetic friction clutch as recited in claim 1 wherein the soft magnetic material is at least partially configured as a laminated core having layers electrically insulated from each other at right angles to the direction of flow.

Claim 7 (original): The electromagnetic friction clutch as recited in claim 1 wherein the first clutch part has at least one non-ferromagnetic support having a plurality of flux conductors made of the soft magnetic material positioned at a distance from each other, each flux conductor joining at least two flux crossover points with each other.

Claim 14 (previously presented): The electromagnetic friction clutch as recited in claim 1 wherein the first clutch part includes a first clamping jaw and a second clamping jaw movable with respect to each other and the second clutch part is configured as a disk positioned between the first and second clamping jaws.



Claim 15 (original): The electromagnetic friction clutch as recited in claim 14 wherein the disk includes a soft magnetic material and has slots extending in the soft magnetic material of the disk in a plurality of rows adjacent to each other.

Claim 16 (original): The electromagnetic friction clutch as recited in claim 15 wherein the slots extend on circular paths concentric to an axis of rotation.

Claim 20 (original): The electromagnetic friction clutch as recited in claim 1 wherein the electromagnet includes a stationary coil, the clutch parts being mounted on a common shaft so as to be rotatable relative to the coil and relative to each other.

Claim 21 (original): The electromagnetic friction clutch as recited in claim 1 wherein the electromagnet includes a coil and a soft magnetic core, the magnetic circuit having air gaps between the soft magnetic core and at least one of the first and second clutch parts, the air gaps being positioned in such a way that the magnetic flux passes through the air gaps radially to an axis of rotation.

Claim 23 (original): The electromagnetic friction clutch as recited in claim 1 wherein the first clutch part is connected in a rotationally fixed manner with a shaft and the second clutch part is configured as a wheel with an outer circumference for engaging a belt, a chain, or other drive device

Claim 24 (original): The electromagnetic friction clutch as recited in claim 23 wherein the shaft is a camshaft of an internal combustion engine and the belt, chain or other drive device has a drive connection with a crankshaft of the internal combustion engine.

Claim 25 (original): The electromagnetic friction clutch as recited in claim 1 wherein at least one permanent magnet is situated in the magnetic circuit to produce at least part of the magnetic flux, the electromagnet being configured to weaken and/or strengthen the magnetic flux produced by the at least one permanent magnet in the magnetic circuit.

Claim 35 (original): An electromagnetic friction clutch comprising:

a first clutch part and a second clutch part mounted so as to be rotatable relative to each other, the first clutch part having a soft magnetic material defining at least part of a magnetic circuit, the magnetic circuit having a magnetic force for pressing the first and second clutch parts together;

at least one electromagnet being situated in the magnetic circuit to change the magnetic flux in the first and second clutch parts;

the magnetic circuit being guided in the first and second clutch parts so that the magnetic flux changes at at least five flux crossover points one after the other in a direction of flow of the magnetic circuit between the first and second clutch parts, the soft magnetic material being at least partially configured as a laminated core having layers electrically insulated from each other at right angles to the direction of flow.

Claim 37 (previously presented): The electromagnetic friction clutch as recited in claim 1 wherein the first clutch part is movable toward and away from the second clutch part.

**APPENDIX B**

Evidence Appendix under 37 C.F.R. §41.37 (c) (ix):

No evidence pursuant to 37 C.F.R. §§1.130, 1.131 or 1.132 and relied upon in the appeal has been submitted by appellants or entered by the examiner.

## **APPENDIX C**

Related proceedings appendix under 37 C.F.R. §41.37 (c) (x):

As stated in "2. RELATED APPEALS AND INTERFERENCES" of this appeal brief, appellants, their legal representatives, and assignee are not aware of any appeal or interference that directly affects, will be directly affected by, or will have a bearing on the Board's decision in this appeal.